

US EPA ARCHIVE DOCUMENT

This chapter presents the options that EPA is considering for applying LDR standards to newly identified hazardous mineral processing wastes. The first two of these options are examined in depth in this Regulatory Impact Analysis. The latter two are briefly described, both here and in the NPRM, in the interests of reflecting the views of various interested parties and to effectively solicit public comment on appropriate management standards for the subject wastes.

2.1 SPECIFIC OPTIONS

Option 1 (EPA's Recommended Approach)

Option 1 represents an attempt to both stimulate greater resource recovery in the minerals industry by not classifying recoverable mineral processing residuals as wastes if they are recovered in process units (including land-based units that do not function as disposal units), and ensure that appropriate waste treatment standards and technologies are applied to hazardous mineral processing wastes destined for land disposal, thereby protecting human health and the environment. The focus in this option is generally on the unit and not the material being recovered; so long as a unit is not functioning as a waste disposal unit and resource recovery is occurring from material in the unit, the material would not be classified as a solid (hence, hazardous) waste.

The option consists of three principle features, as follows:

1. All non-exempt mineral processing wastes that are land disposed must meet proposed UTS (for TC metals). This requirement is in keeping with those applied to all other metal-bearing TC characteristic hazardous wastes.
2. A conditional exclusion from the definition of solid waste applies to non-exempt mineral processing residues stored in land-based units (e.g., surface impoundments, piles) prior to reinsertion into the mineral processing production unit. To be eligible for this exclusion, operators must meet the following conditions for each stream for which the exclusion is sought:
 - a. A one time notification must be submitted to the state or EPA that describes the recycling process used to recover metals or other values.
 - b. S/he accepts a burden of proof to show that metals/minerals are legitimately being recovered (e.g., a showing that mineral processing residues have recoverable metals that meet or exceed the metal content of the typical feedstock).
 - c. The subject waste(s) must not contain unacceptably high concentrations of toxic metals, nor can they consist of or contain significant concentrations of organic solvents, pesticides, PCBs, or source radioactive materials.
 - d. No speculative accumulation would be allowed; material stored for more than one calendar year would be classified as a solid waste.
 - e. As implied above, mineral processing residues must return to a process unit for resource recovery; direct disposal would be subject to Subtitle C.

- f. EPA would impose a basic unit integrity standard for all units storing materials for recovery.¹
 - g. The unit must be in compliance with a groundwater protection performance standard, consisting of a requirement to meet the MCL at the point of compliance (a monitoring well placed 150 feet beyond the unit boundary); unit-specific corrective action would be required in the event of contaminant releases detected by the required monitoring.
 - h. Groundwater monitoring would be required unless one of the following three conditions were met: (i) compliance with existing state requirements meets or exceeds the performance standard; (ii) the unit meets minimum technological design standards (i.e., Subtitle C criteria); or (iii) the operator receives an *ad hoc* determination from the state or Regional Administrator that an alternative practice is satisfactory.
 - i. Wastewater treatment impoundments subject to NPDES requirements would not qualify as "process units."
3. Hazardous mineral processing residues could be recycled to primary beneficiation operations/units without risk to the Bevill status of any beneficiation wastes generated by such units. That is, these operations would not become regulated Subtitle C units and resulting wastes from these units would not lose their Bevill status when mineral processing residues were mixed with ores, minerals, or beneficiated ores or minerals, provided that the following conditions were met:
- a. At least 50 percent of the materials entering the operations are ores, minerals, or beneficiated ores or minerals;
 - b. The incoming mineral processing residuals meet a legitimacy test (i.e., the residuals contain recoverable metals/minerals concentrations greater than or equal to the normal mineral inputs to the beneficiation operation);
 - c. The resultant waste is not significantly affected by the addition of such residuals; and
 - d. No waste solvents, pesticides, PCBs, or source radioactive materials are added to the Bevill beneficiation unit.

The operator would bear the burden of proof to show that all of these conditions were met. As in the above situations, mineral processing residues must return to a process unit; direct disposal would be subject to RCRA Subtitle C requirements.

One significant implication of this option is that it would simultaneously *relax* regulatory controls over reclamation of spent materials stored on the ground and *impose new* regulatory requirements on sludges and by-products that are stored on the ground prior to reclamation. In addition, EPA believes that this approach could be employed to stimulate re-mining of historically disposed mineral production wastes, though the costs and benefits of this aspect of Option 1 are not examined in this RIA. Furthermore, the Agency is reviewing the implications of broadening the scope of the conditional exclusion to allow recovery of other materials (e.g., heavy metal-contaminated media) in mineral processing units, and solicits comment on this issue.

¹ EPA believes that properly designed and constructed material storage units currently meet this standard, so as to minimize loss of unit contents.

Option 2 (Conventional Application of LDRs)

This option represents a direct continuation of the existing RCRA Subtitle C LDR program without significant modifications. The option has the following general features:

1. All mineral processing wastes (including recycled secondary materials classified as solid wastes under current 40 CFR Part 261.2 provisions) that are land disposed must meet proposed UTS treatment standards (TC metals). This requirement is in keeping with those applied to all other metal-bearing TC characteristic hazardous wastes.
2. There is no modification of the definition of solid waste. Characteristic sludges and by-products would not be defined as solid wastes when reclaimed and could continue to be stored on the land unconditionally prior to reinsertion to the mineral processing production unit (though releases from storage would be considered solid wastes, as abandoned). Spent materials stored prior to recovery would require RCRA Subtitle C storage permits and meet LDR standards before placement. Spent materials stored in RCRA tanks, containers, or containment buildings prior to reclamation at generator sites could be stored for up to 90 days without a permit. Any storage of spent materials in non-land based units off-site would require a storage permit.
3. There would be no exemption from RCRA Subtitle C jurisdiction and regulation for Bevill mineral beneficiation process units or wastes resulting therefrom that have involved commingling of non-exempt mineral processing wastes under this option.

Option 3 (Spent Material Variant of Option 1)

This option represents a less stringent application of the concepts introduced under Option 1. This option would be identical to Option 1 except that the conditional exclusion would only apply to spent materials. Characteristic sludges and by-products would remain unconditionally outside of RCRA jurisdiction when reclaimed.

Option 4 (National Mining Association proposal)²

This option represents an approach advanced by the National Mining Association (NMA), which is an industry trade association representing the interests of many of the facility operators that would be affected by today's proposed rule. NMA has long-standing concerns regarding EPA's jurisdiction over activities that are not strictly related to waste disposal. NMA and its predecessor organizations have continually challenged the Agency's authority to impose RCRA waste management standards on various activities and materials within the minerals industries. NMA's proposal centers around the following concepts:

1. EPA would embrace the Court's findings in the *AMC I*³ case that RCRA jurisdiction does not extend to process or production units. Accordingly, EPA would allow land placement, without conditions, on any materials destined for further processing.

² EPA has received another industry-sponsored proposal, from the Metals Industries Recycling Coalition (MIRC), an organization representing several metals production companies and related trade associations, including the Specialty Steel Industry of North America, the Steel Manufacturers' Association, and the American Iron and Steel Institute. The proposal advanced by MIRC principally addresses the management of a number of secondary materials not generated within the primary minerals industry. Consequently, EPA believes that the proposal and the materials that would be affected by it are beyond the scope of the analyses presented in this RIA.

³ 824 F. 2d 1176 (D.C. Cir. 1987). EPA differs with NMA as to the scope of the Court's mandate in this case.

2. Virtually all material generated has value that might at some future time be recovered, and hence, would not be considered solid wastes.
3. Limited conditions would be established for land placement of a very limited category of wastes (some slags and furnace brick). These conditions would be limited to the following:
 - a. Materials may not be indiscriminately spilled or leaked into the environment;
 - b. The operator would be required to make a one-time notification to EPA or the state; and
 - c. No new wastes could be placed in Bevill-exempt waste units.
4. EPA would allow placement of secondary materials generated outside of primary mineral processing (e.g., electroplating sludges) into processing units (none of which could be land-based), provided limited conditions were met.

2.2 DISCUSSION AND IMPLICATIONS FOR THE REGULATORY IMPACT ANALYSIS

As stated previously, EPA has performed detailed analysis of only the first two options presented above. The Agency believes that the costs, economic impacts, and benefits of Option 3 would be of intermediate magnitude between those of Options 1 and 2. Treatment and disposal costs would be identical among the three options (assuming no shifts in recycling practices), and the only post-compliance change would be some possible shifts from treatment and disposal to reclamation of spent materials. Predicting the magnitude and distribution of these potential shifts is beyond the scope of this analysis. The impacts arising from Option 4 would generally parallel those of Option 1, given the Agency's assumptions regarding current residue management practices; EPA sees nothing in the NMA proposal that suggests that mineral processing residues that are not reclaimed or recycled would not be subject to Subtitle C management standards (including LDR treatment requirements) if they are listed or exhibit a characteristic of hazardous waste. Materials destined for reclamation would face less rigorous standards for storage on the land, because the NMA proposal would impose virtually no storage requirements. Thus, adoption of the NMA proposal would impose the lower costs and benefits than any of the EPA options considered in this analysis.

The Agency's analysis of Options 1 and 2 focuses on those provisions that are most likely to influence costs, risks, or both. As explained in more detail below, under one set of baseline assumptions, the costs and benefits of today's rule are approximately zero, particularly under Option 2. This outcome would occur using an assumption that all generators of hazardous mineral processing wastes are already in full compliance with Subtitle C standards, except for LDRs. The least-cost method for attaining compliance for most operators would be to lime neutralize and/or cement-stabilize their waste(s) to remove the hazardous characteristic(s).⁴ Because this method also would be used to achieve UTS, there would be essentially no new treatment required upon promulgation of the LDRs, and hence, no costs or benefits associated with the rule.

Assuming the alternative baseline, however, under Option 1, the requirements that would likely have the most impact include closing existing surface impoundments and piles in favor of tanks, containers, and storage buildings (for wastewaters and low-volume solids), and ground water monitoring, unit-specific corrective action, and material storage on a relatively impermeable surface (for high volume solids). Most other requirements under this option are administrative in nature and/or would not directly impose any costs or impart any benefits. Under Option 2, the cost- and risk-driving requirement is treatment (lime neutralization and/or cement stabilization) to achieve UTS, though storage in tanks, containers, and buildings prior to reclamation would be a cost-effective management strategy for some wastes.

⁴ As discussed at length in Chapter 3, below, the vast majority of hazardous mineral processing wastes exhibit the characteristics of corrosivity and/or toxicity. EPA has shown that cement stabilization (in some cases preceded by neutralization), which is the basis for the UTS standards, is an effective treatment technology for removing these hazardous waste characteristics.
